

DISCUSSION.

The weather map showing the conditions two hours after the tornado occurred (fig. 3) fails to indicate any large cyclone or low-pressure system such as is usually associated with the occurrence of tornadoes. In this case, there was a small low with generally moderate winds. The weather in front of the center was cloudy and cool, while that in the rear was warm, hot in the southwest quadrant. Intermediate clouds at Minneapolis (Ci.Cu., SE.) and Duluth (A.St., S.) moving from the south indicated, perhaps, an unusual depth to the cyclonic circulation. Since violent convection is necessary to the production of tornadoes and such severe thunderstorms as were experienced through central and southern Minnesota in the afternoon and night of the 22d, it seems reasonable to suppose that the cool southerly and easterly winds of the front half of the cyclone overran, in part at least, some of the warm winds in the rear half, thereby producing steep vertical temperature gradient. Or the hot winds of the southwest quadrant may have under-run the cool winds of the southeast. One is led to wonder whether the movement of the thunderstorms toward the region with cool weather instead of away from it as is usual had anything to do with their extreme severity.—*C. F. Brooks.*

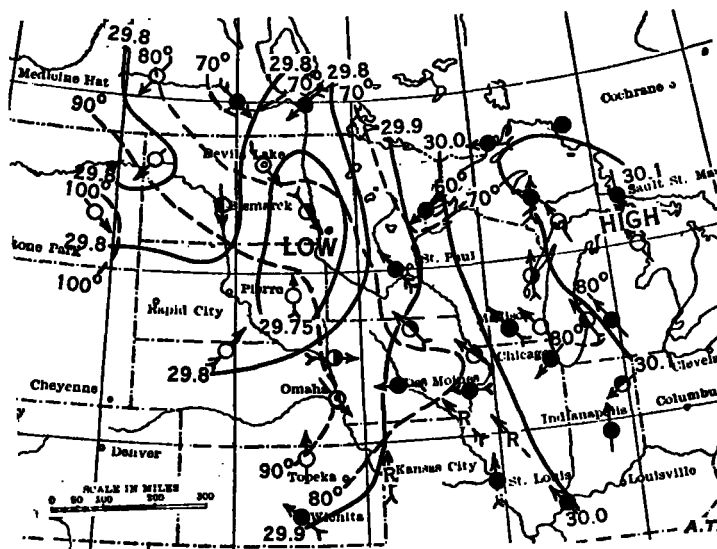


FIG. 3.—Weather map, 6 p. m. (90th meridian time), June 22, 1919. Dot shows location of Fergus Falls. Barbs on arrows show wind velocities in Beaufort units. (Courtesy, Minneapolis Journal.)

HAILSTORMS IN SOUTH CAROLINA, JUNE 8 AND 9, 1919.

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FIG. 1.—Hailstorms in South Carolina, June 8-9, 1919.

On the basis of newspaper reports of hailstorms published on June 9 and 10, 1919, inquiries were sent to postmasters and others in the affected areas.

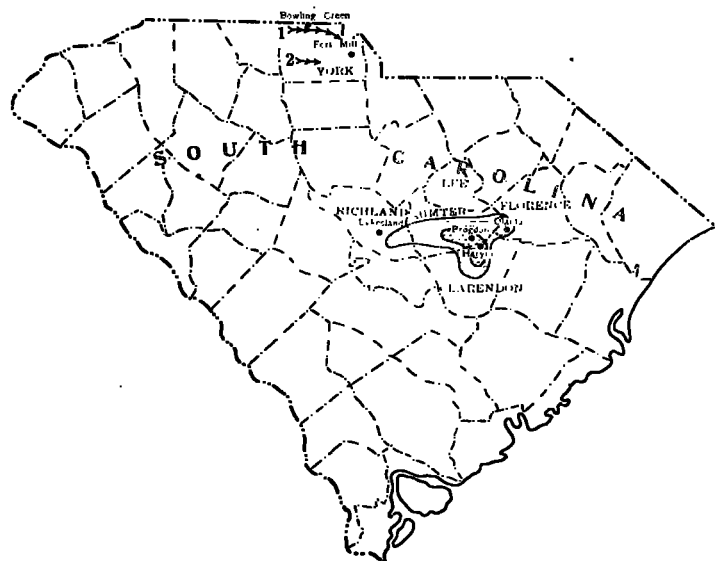


FIG. 1.—Hailstorms in South Carolina, June 8 and 9, 1919.

The most destructive storm was in southern Sumter and northern Clarendon counties, where the damage to growing crops approximated \$262,000 in a region 5 by 20 miles on the county line, in the neighborhood of

Brogdon and Harvin. The general hail area extended from near Lykesland, in eastern Richland County, to near Olanta, in western Florence County, and from central Sumter County to central Clarendon County in greatest breadth, or approximately 25 by 50 miles. The hailstones ranged in size from pebbles or small marbles to hen eggs, the storm culminating between Brogdon and Harvin, where growing crops were damaged probably 30 to 80 per cent, and in isolated instances probably 100 per cent. As in most cases of hail damage, magnified by large heads in the newspapers, the area of total hail damage is comparatively small, and crops frequently recover to full fruitage in large areas after the storm, as in the case of the great hailstorm in the northern part of this State in July, 1914, which was the most widespread and destructive of record in this State.

In York County, the path of the hailstorm of the afternoon of the 8th was 1.5 to 12 miles in extent, beginning at a point west of Bowling Green and running eastward and thence southeastward toward Fort Mill. The hailstones were mostly small, according to the postmaster at Bowling Green. The total damage was estimated at \$50,000 to \$65,000.

The second storm in York County during the afternoon of June 9 was only 0.5 to 3.0 miles in extent, in a path about 3 miles south of the town of York. The hailstones ranged from peas in size to 1 inch in diameter. The damage approximated \$35,000.

Figure 1 shows the location and extent of these storms.